

DEC 11 2006

Application No.: 10/522,140

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Docket No.: 449122076800

REMARKS

Claims 1-9 have been rejected under 35 USC 102(e) as anticipated by Moraal. The rejection is respectfully traversed.

The present invention relates to a method for regenerating a particulate filter. Particulate filters are subject to blocking and, therefore, have to be regenerated from time to time. Usually, filters are regenerated by increasing exhaust gas temperature, thus burning soot particles accumulated in the filter. Increase of exhaust temperature, however, deteriorates engine efficiency (higher fuel consumption). Therefore, to achieve optimal filtering efficiency and to keep operating costs arising from the regeneration of the filter as low as possible, the initiation of regeneration has to be properly controlled.

According to a known method of regenerating the particulate filter, pressure sensors are placed upstream and downstream of the filter to measure pressure drop over the filter. Regeneration is initiated as soon as the pressure drop exceeds a given threshold. However, this method requires two pressure sensors being exposed to chemical and mechanical wear which causes additional costs.

The instant invention provides an alternative cost-saving and reliable method for regenerating a particulate filter. According to the present invention, regeneration of the particulate filter is initiated based on a difference between a measured air mass flow supplied to the combustion engine and a calculated air requirement of the combustion engine at the current operating point. Accumulation of soot particles in the filter causes an increase of exhaust gas counterpressure, thus influencing air flow through the engine. The discrepancy between the air mass flow and the calculated air requirement at the same operating point represents an indicator for the extent of blocking of the filter. This method allows a precise control of initiation of filter regeneration without requiring any additional hardware, e.g. costly pressure sensors.

Moraal, on the other hand, relates to a method for interrupting the regeneration of a particulate filter to protect the filter against overheating. This is achieved by increasing EGR rate, thus reducing oxygen concentration in the exhaust gas. EGR rate is governed by the stability of the

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combustion process. Moreover, EGR rate depends on the intake manifold pressure. Therefore, Moraal et al suggests maintaining a predetermined intake manifold pressure (MAP_{mod}) which depends on a difference between a predetermined mass air flow rate (MAF_{des}) and a measured mass air flow rate (MAF_{mes}).

As discussed above, the method of Moraal relates to the interruption of regeneration to avoid filter overheating. However, Moraal does not disclose how to control the initiation of the filter regeneration, as required by the claimed invention.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue. If it is determined that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 03-1952 referencing docket no. 449122076800.

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Respectfully submitted,

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